

EXHIBIT A

Analytical Investigation of Damaged 320 Crankshaft

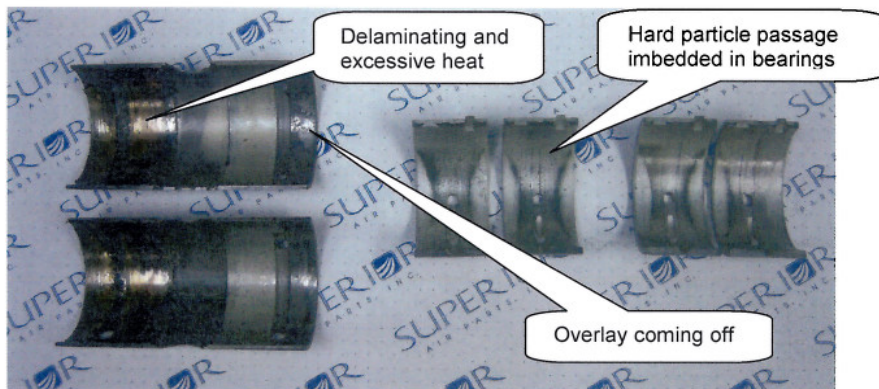
Lycoming 320 Engine

July 10, 2009

Crankcase - Narrow Deck - Serial Number L-4709-36

Crankshaft - P/N SL32500 - Serial Number TA07B-000430

Received a Crankcase, Crankshaft, Main Bearings, and #1 Connecting Rod/with bearings. Tag on crankcase indicated Aircraft Specialties for Jon Reiner O-320 Marshal Dean.

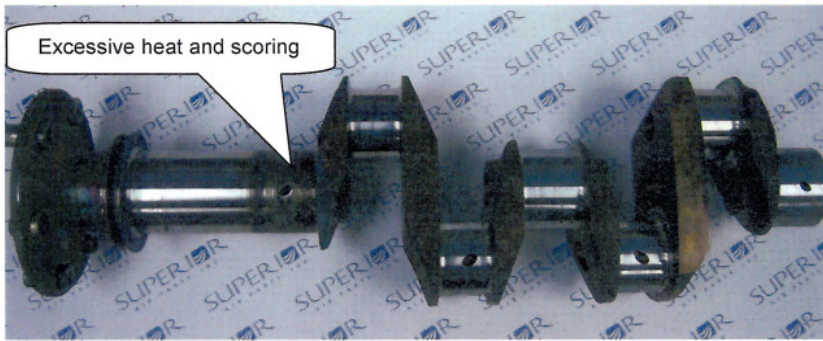


Front Main bearings show hard particle passage has been deposited in the front half of the front main bearing. No significant damage to this area at this time. Overlay on the bearing surface is just starting to come off in the first 3/8" of the bearing. Excessive bearing material is delaminating from the rear half of the front main bearing. There are excessive heat indications on the inside of the rear third of the bearing.

Center and Rear Main bearings show hard particle passage has been deposited in bearings. No significant damage to this area at this time. Overlay on the bearing surface shows indications of initial smearing starting to develop.



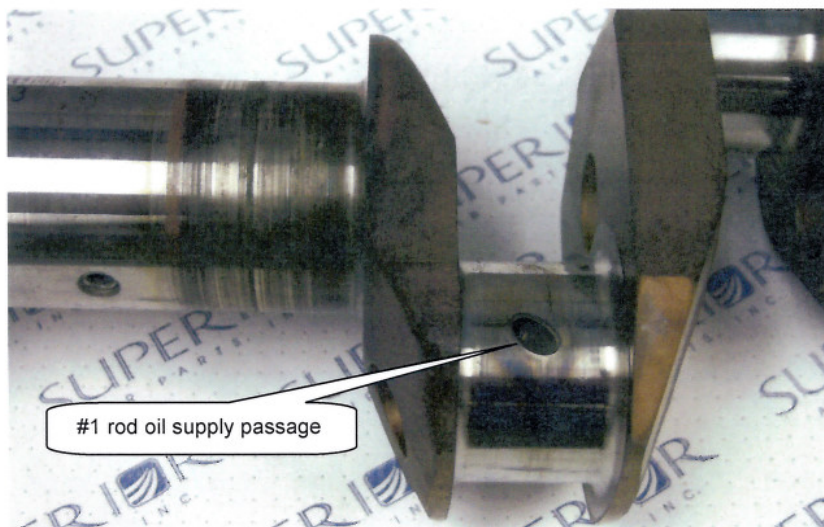
Number 1 Rod bearings show hard particle passage has been deposited in bearings. No significant damage to this area at this time. Overlay on the bearing surface shows indications of initial smearing starting to develop.



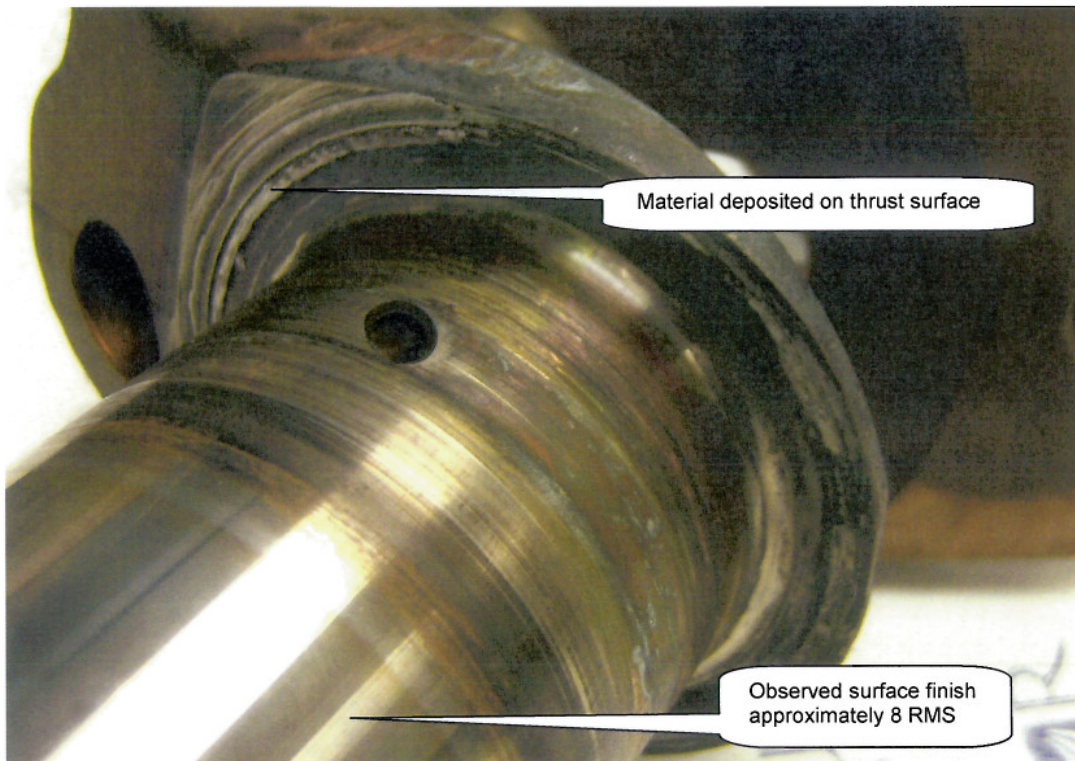
The rear third of the Crankshaft front main journal and thrust surface show indications of excessive heat and scoring.



Closer view of excessive heat and scoring on front main journal. The journal was measured in 7 locations along the non heat affected area, all measurements were between 2.37495 and 2.37530, which falls within specifications.



The #1 Rod Journal shows indications of excessive heat in the area around the oil supply passage. Oil passage was checked and was found to be clear.



The required specification of the main journal finish prior to polishing is 10 RMS. The observed finish of the undamaged area of the main journal is approximately 8 RMS.



The thrust and anti-thrust surfaces have material deposited on them that appears to be aluminum from the crankcase.



Part Number SL32500



Serial Number TA07B-000430

The crankshaft hardness was checked and found to be 87HR which is within manufacturers limits of 83HR15N minimum.